

IN THE CLAIMS

1. (Currently Amended) A method for providing dynamic configuration services comprising:

requesting, with a local device, configuration services from a first remote device over a network in response to connecting the local device to the network, the requested configuration services including acquiring an IP (Internet protocol) address and a domain name for the local device from the first remote device, wherein the first remote device operates as a DHCP (dynamic host configuration protocol) server to the network;

operating the local device as a configuration services server to provide configuration services to one or more second remote devices of said network if the response to ~~said the requested configuration information request~~ services is not received by the local device from said first remote device within a predetermined period of time or if the response to ~~said configuration information request~~ the requested configuration services is received by the local device from said first remote device within the predetermined period of time and the response indicates that the local device has a higher priority than the first remote device, wherein the local device is operated as a DHCP server to the network to provide the configuration service, the configuration services provided by the local device including assigning an IP address and allocating a domain name for each of the second remote devices; and

operating the local device as a configuration services client to receive configuration services from said first remote device if the response is received within the predetermined period of time and said first remote device has a higher priority than said local device, wherein the local device is configured using to use the received configuration services from the first remote device when entering the network, including acquiring an IP address and a domain name for the local device from the first remote device, wherein the local device utilizes the acquired IP address and domain name to boot the local device up and enter the network using the acquired IP address and domain name as an identity representing the local device in the network.

2. (Currently Amended) The method defined in claim 1, wherein priorities of the local device and the first remote device are determined based on information obtained from a field compatible with an option field of TCP/IP packets exchanged between the local device and the first remote device, and wherein the local device is configured to operate as the configuration services server if information stored in the option field of the TCP/IP packets indicates that the priority of the local device is higher than the first remote device, even if the first remote device is configured to operate as a configuration services server. ~~wherein said providing configuration services with the local device comprises:~~

~~determining a first network address;~~

~~assigning a second network address;~~

~~assigning a network name;~~

~~correlating said first network address, said second network address, and said network~~

name; and

~~recording said correlated first network address, said correlated second network address
and said correlated network name in a table.~~

3. (Currently Amended) The method defined in claim 2, ~~wherein said first network address
comprises a media access control (MAC) address.~~ 2, further comprising:

periodically sending by the local device a DHCP discover message across the network
until the predetermined period of time expires;

determining whether a DHCP offer is received by the local device before the
predetermined period of time expires;

in response to the DHCP offer received from the first remote device within the
predetermined period of time, the local device sending a DHCP request to the first remote device
for requesting information from the DHCP offer;

in response to the DHCP request, the local device receiving the requested configuration
information from the first remote device including the requested IP address; and

the local device using the received configuration information to boot the local device into
the network.

4. (Currently Amended) The method defined in claim 2, ~~wherein said second network
address comprises an Internet Protocol (IP) address.~~ 3, further comprising maintaining a DHCP
table within the local device when the local device is operating as a configuration services server,

wherein the DHCP table includes information regarding an IP address and a network name associated with each of the second remote devices in the network.

5. (Currently Amended) The method defined in claim 24, ~~wherein assigning said network name comprises~~further comprising:

in response to a request for a network name from one of the second remote devices, the local device, operating as a configuration services server, detecting a network name conflict via the DHCP table regarding the requested network name; the local device resolving said network name conflict using the DHCP table; and the local device recording a code in said the DHCP table to indicate said network name conflict.

6. (Currently Amended) The method defined in claim 25, ~~wherein said network name is suggested by said local device.~~further comprising:

receiving a request for modifying a network name from one of the second remote devices;
if the requested modified network name is in conflict with another network name used by another one of the second remote devices based on the DHCP table, the local device converting the requested modified network name into a unique network name by appending one or more numbers to the requested modified network name, if the requested modified name is not longer than a predetermined length;
and

if after appending the one or more numbers, the modified network name is not unique,
incrementing the last character of the modified name in an alphabetical order
attempting to make the modified network name unique.

7. (Currently Amended) The method defined in claim 6, further comprising:
maintaining within the local device operating as a configuration services server, a user
database for storing user information of the one or more second remote devices in
the network, wherein the user database is implemented according to at least a
portion of the following structures:

adminNOA:Administrator:adminpassword:
user1: User Name 1 :user1password:admin,group1,group2
user2: User Name 2 :user2password:group1
group1: Group Name 1:
group2: Group Name 2:
group3: Group Name 3:group2.

~~1, wherein the local device operates as a server device providing configuration services to the~~
~~network even if the first remote device is available, if the priority of the local device is higher~~
~~than the first remote device.~~

8-11. (Canceled)

12. (Currently Amended) A method comprising:
determining service capability of a local device coupled to a network including whether
said local device is capable of providing configuration services to one or more remote devices of
said network;

operating the local device as a server device to provide configuration services to the one or more remote devices from the local device of said network if configuration services are not provided by a network device of the network having a higher priority than said local device, the provided configuration services including supplying user and group information to the one or more remote devices of the network, and allocating and assigning an IP address and network name to each of the one or more remote devices, wherein priorities of the local device and the network device are determined based on information stored in a standard option field of TCP/IP packets exchanged between the local device and the network device; and

operating said local device as a client device to receive configuration services from a remote device if said remote device has a higher priority than said local device, wherein the local device is configured ~~using~~ to use the received configuration services from the remote device when entering the network, wherein the received configuration services include obtaining user and group information, an IP address, and network name from the network device, and wherein the local device utilizes the obtained user and group information, an IP address, and network name as an identity representing the local device in the network.

13. (Previously Presented) The method defined in claim 12, wherein supplying user and group information comprises:

the network device detecting when said local device is connected to said network;

the network device sending a first user and group list to said local device in response to said local device connecting to said network;

said local device comparing said first user and group list with a second user and group list resident on said local device; and

said local device determining whether said first user and group list or said second user and group list is more recent;

the network device receiving a more recent user and group list from said local device;

the network device updating said user and group information to reflect said more recent user and group list; and

propagating said updated user and group information throughout said network.

14. (Currently Amended) The method defined in claim 13, wherein a time-stamp is used to determine whether said first user and group list or said second user and group list is more recent, wherein the time-stamp is implemented according to a following format:

{YYYYMM1DDHHMM2SS},

“YYYY” representing a year, “MM1” representing a month, “DD” representing a day,

“HH” representing an hour, “MM2” representing a minute, and “SS” representing a second, when a respective user and group list is received.

15. (Original) The method defined in claim 13, wherein updating said user and group information comprises recording said more recent user and group list in clear text.

16. (Original) The method defined in claim 15, wherein updating said user and group information comprises encrypting said user and group information prior to transmission across said network.

17. (Original) The method defined in claim 12, further comprising:

correlating said network address and said network name; and

storing said correlated network address and said correlated network name in a table.

18. (Previously Presented) The method defined claim 12, wherein said network name is suggested by said local device.

19. (Original) The method defined in claim 12, wherein HyperText Transfer Protocol (HTTP) is used to exchange information.

20. (Original) The method defined in claim 12, wherein Service Location Protocol (SLP) is used to exchange information.

21. (Currently Amended) A device configured to:

receive-requesting a first network address from a first remote device coupled over a network;

operate as a server device to provide network configuration services to a second remote device of the network, if said first network address is not received from said remote device within a predetermined period of time;

communicating with the first remote device over the network to determine whether ~~its~~ a priority level of the device is higher than the first remote device, if said first network address is received from said remote device, wherein priorities of the device and the first remote device are determined based on information stored in a standard option field of TCP/IP packets exchanged between the device and the first remote device;

operate as a server device to provide said network configuration services to members of the network including the first remote device and the second remote device if said priority level is higher than a second priority level of said remote device, wherein the first remote device operates as a client device for receiving the configuration services in response to the determination of the priority level; and

operate as a client device to receive configuration services from said first remote device if said remote device has a higher priority than said device, wherein said device is configured ~~using~~ to use the received configuration services from the first remote device when entering the network.

22. (Canceled)

23. (Previously Presented) The device defined in claim 21 further configured to automatically:

assign a second network address;

assign a network name;

correlate said second network address with said network name; and

record said correlated second network address and said correlated network name in a table.

24. (Previously Presented) The device defined in claim 23, wherein said table further comprises:

a Media Access Control (MAC) address; and

a code to indicate a conflict with said network name.

25. (Previously Presented) The device defined in claim 23, wherein said first and second network addresses comprise Internet Protocol (IP) addresses.

26. (Currently Amended) A network comprising:

a first device configured to

assign an address to a second device on said network;

assign a network name to said second device on said network;

supply user and group information across said network; and

determine service capability of said second device on said network,

wherein if said first device is capable of providing configuration services to said network;

operate as a server device to provide configuration services to one or more devices of said network if configuration services are not provided by a network device having a higher priority than said first device, wherein priorities of the first device and the network device are determined based on information stored in a standard option field of TCP/IP packets exchanged between the first device and the network device; and

operate as a client device to receive configuration services from said remote device if said remote device has a higher priority than said first device, wherein the first device is configured using to use the received configuration services from the remote device when entering the network, wherein the received

configuration services include obtaining user and group information, an IP address, and network name from the network device, and wherein the first device utilizes the obtained user and group information, an IP address, and network name as an identity representing the first device in the network.

27-30. (Canceled)

31. (Currently Amended) An apparatus comprising:

means for requesting, with a local device, configuration services from a remote device coupled to the network in response to connecting the local device to the network, the requested configuration services including acquiring an IP (Internet protocol) address and a domain name for the local device from the first remote device, wherein the first remote device operates as a DHCP (dynamic host configuration protocol) server to the network;

means for operating the local device as a configuration services server to provide configuration services to one or more remote devices of said network if the response to ~~said configuration information request~~ the requested configuration services is not received by the local device from said remote device within a predetermined period of time or if the response to ~~said configuration information request~~ the requested configuration services is received by the local device from said remote device within the predetermined period of time and the response indicates that the local device has a higher priority than the remote device, wherein the local device is operated as a DHCP server to the network to provide the configuration service, the configuration services provided by the local device including assigning an IP address and allocating a domain name for each of the second remote devices; and

means for operating the local device as a client device to said remote device if the response is received within the predetermined period of time and said remote device has a higher priority than said local device, wherein the local device is configured using the received configuration services from the remote device when entering the network, including acquiring an IP address and a domain name for the local device from the first remote device, wherein the local device utilizes the acquired IP address and domain name to boot the local device up and enter the network using the acquired IP address and domain name as an identity representing the local device in the network.

32. (Currently Amended) The apparatus defined in claim 31, wherein priorities of the local device and the first remote device are determined based on information obtained from a field compatible with an option field of TCP/IP packets exchanged between the local device and the first remote device, and wherein the local device is configured to operate as the configuration services server if information stored in the option field of the TCP/IP packets indicates that the priority of the local device is higher than the first remote device, even if the first remote device is configured to operate as a configuration services server. ~~wherein said means for providing configuration services comprises:~~

~~means for determining a first network address;~~

~~means for assigning a second network address;~~

~~means for assigning a network name;~~

~~means for correlating said first network address, said second network address, and said network name; and~~

~~means for recording said correlated first network address, said correlated second network~~

~~address and said correlated network name in a table.~~

33. (Currently Amended) The apparatus defined in claim 32, further comprising: ~~wherein~~
said first network address comprises a media access control (MAC) address.

periodically sending by the local device a DHCP discover message across the network
until the predetermined period of time expires;

determining whether a DHCP offer is received by the local device before the
predetermined period of time expires;

in response to the DHCP offer received from the first remote device within the
predetermined period of time, the local device sending a DHCP request to the first remote device
for requesting information from the DHCP offer;

in response to the DHCP request, the local device receiving the requested configuration
information from the first remote device including the requested IP address; and

the local device using the received configuration information to boot the local device into
the network.

34. (Currently Amended) The apparatus defined in claim 33, further comprising means for
maintaining a DHCP table within the local device when the local device is operating as a
configuration services server, wherein the DHCP table includes information regarding an IP
address and a network name associated with each of the second remote devices in the
network. ~~32, wherein said second network address comprises an Internet Protocol (IP) address.~~

35. (Currently Amended) The apparatus defined in claim 32, ~~wherein the means for assigning said network name comprises~~34, further comprising:

in response to a request for a network name from one of the second remote devices, the local device, operating as a configuration services server, means for detecting a network name conflict via the DHCP table regarding the requested network name; means for the local device resolving said network name conflict using the DHCP table;
and
means for the local device recording a code in the DHCP table to indicate said network name conflict.

~~means for detecting a network name conflict;~~

~~means for resolving said network name conflict; and~~

~~means for recording a code in said table to indicate said network name conflict.~~

36. (Currently Amended) The apparatus defined in claim 32, ~~wherein said network name is suggested by said local device.~~35, further comprising:

receiving a request for modifying a network name from one of the second remote devices;
if the requested modified network name is in conflict with another network name used by another one of the second remote devices based on the DHCP table, the local device converting the requested modified network name into a unique network name by appending one or more numbers to the requested modified network name, if the requested modified name is not longer than a predetermined length;
and

if after appending the one or more numbers, the modified network name is not unique,
incrementing the last character of the modified name in an alphabetical order
attempting to make the modified network name unique.

37. (Original) The apparatus defined in claim 36, further comprising:
maintaining within the local device operating as a configuration services server, a user
database for storing user information of the one or more second remote devices in
the network, wherein the user database is implemented according to at least a
portion of the following structures:

adminNOA:Administrator:adminpassword:
user1: User Name 1 :user1password:admin,group1,group2
user2: User Name 2 :user2password:group1
group1: Group Name 1:
group2: Group Name 2:
group3: Group Name 3:group2.

~~31, wherein said predetermined period of time is varied.~~

38. (Previously Presented) An apparatus comprising:
- means for assigning an address to a local device on said network;
 - means for assigning a network name to said local device;
 - means for supplying user and group information across said network; and
 - means for determining service capability of said local device including whether said local device is capable of providing configuration services to one or more remote devices of said network;
 - means for providing configuration services to one or more devices of said network if configuration services are not provided by a network device having a higher priority than said

local device, the configuration services being provided to the network device having a lower priority than the local device, wherein priorities of the local device and the network device are determined based on information stored in a standard option field of TCP/IP packets exchanged between the local device and the network device; and

means for operating as a client device to receive configuration services from a remote device if said remote device has a higher priority than said local device, wherein the local device is configured using the received configuration services from the network device when entering the network, wherein the received configuration services include obtaining user and group information, an IP address, and network name from the network device, and wherein the local device utilizes the obtained user and group information, an IP address, and network name as an identity representing the local device in the network.

39. (Original) The apparatus defined in claim 38, wherein the means for supplying user and group information comprises:

means for detecting when said local device is connected to said network;

means for sending a first user and group list to said local device in response to said local device connecting to said network;

means for said local device comparing said first user and group list with a second user and group list resident on said local device; and

means for said local device determining whether said first user and group list or said second user and group list is more recent;

means for receiving a more recent user and group list from said local device;

means for updating said user and group information to reflect said more recent user and group list; and

means for propagating said updated user and group information throughout said network.

40. (Currently Amended) The apparatus defined in claim 39, wherein a time-stamp is used to determine whether said first user and group list or said second user and group list is more recent, wherein the time-stamp is implemented according to a following format:

{YYYYMM1DDHHMM2SS},

“YYYY” representing a year, “MM1” representing a month, “DD” representing a day,

“HH” representing an hour, “MM2” representing a minute, and “SS” representing a

second, when a respective user and group list is received.

41. (Original) The apparatus defined in claim 39, wherein means for updating said user and group information comprises means for recording said more recent user and group list in clear text.

42. (Original) The apparatus defined in claim 41, wherein means for updating said user and group information comprises means for encrypting said user and group information prior to transmission across said network.

43. (Original) The apparatus defined in claim 38, further comprising:

means for correlating said network address and said network name; and

means for storing said correlated network address and said correlated network name in a table.

44. (Original) The apparatus defined claim 38, wherein said network name is suggested by said local device.

45. (Original) The apparatus defined in claim 38, wherein HyperText Transfer Protocol (HTTP) is used to exchange information.

46. (Original) The apparatus defined in claim 38, wherein Service Location Protocol (SLP) is used to exchange information.

47. (Currently Amended) The method of claim 1, wherein the local device is associated with one of a plurality of operating states, the plurality of operating states including an initial state, non-master state, temporary master state, and a master state, wherein whether the local device should operate as a client device or a server device is determined based on the operating state the local device is being associated at a point in time.

48. (Previously Presented) The method of claim 47, wherein the master state is assigned when the local device is configured to provide configuration services to the network, wherein the initial state is assigned when the local device is manufactured, wherein the non-master state is assigned when the local device is configured as a server device but does not currently provide services to the network, and wherein temporary master state is assigned when

the local device temporary provides configuration services to the network while a master server is unavailable and until the master server becomes available.

49. (Previously Presented) The method of claim 47, wherein if the local device is in the master state when it enters the network, the local device operates as the configuration services server to provide configuration services to rest of the members in the network if the local device has a highest priority than the rest of the server devices in the network.

50. (Previously Presented) The method of claim 49, wherein if the local device is not in the master state when it enters the network, the local device transmits a broadcast message to the network to request configuration services from any server device of the network.

51. (Previously Presented) The method of claim 50, wherein if a response associated with the request is received by the local device from the first remote device within a predetermined period of time, the local device transitions to the non-master state and operates as a client device that receives the configuration services from the first remote device and is configured using the received configuration services.

52. (Previously Presented) The method of claim 51, further comprising:
determining whether the local device is in the non-master state if the response is not received within the predetermined period of time;
transitioning the local device into the temporary master state if the local device is in the non-master state; and

operating the local device as a temporary configuration server to provide temporary configurations services to the network until a remote configuration server becomes available which takes over the temporary services provided from the local device.

53. (Previously Presented) The method of claim 52, further comprising:
the local device substantially concurrently transmitting a discovery message to the network to discover whether another server device becomes available; and
the local device informing the network that no more new configuration service is available from the local device, if a response with respect to the discovery message is received by the local device from the another server device.

54. (Previously Presented) The method of claim 53, further comprising:
the local device determining whether at least one other device of the network is still subscribing configuration services from the local device; and
the local device terminating the configuration services if no more other device of the network is subscribing the configuration services from the local device.

55. (Previously Presented) The method of claim 54, further comprising operating the local device as a client device to the another server device to receive further configuration services after terminating the configuration services of the local device.

56. (Previously Presented) The method of claim 52, further comprising:

determining whether the local device is in the initial state if it is determined that the local device is not in the non-master state when the response is not received within the predetermined period of time;
transitioning the local device into the master state if the local device was in the initial state; and
operating the local device as a server device to provide configuration services to the network.

57. (Previously Presented) The method of claim 56, further comprising:
prompting a user for entering an operating state that the local device is intended to enter;
and
operating the local device as a temporary server device or a master server device if the user entered operating state is not a non-master state.